CHAPTER 5

BATCHING AND MIXING

5-1. General. Standard minimum requirements for batching and mixing of concrete cover three types of plants: automatic, semiautomatic, and manual. For paving projects, either automatic or semiautomatic plants will be acceptable. Specifications will be prepared to allow either type of plant, and the Contractor will have the option as to the type of plant to be used.

5-2. Capacity of plant. The capacity to be specified for the batching plant and mixing equipment will be determined in accordance with the concrete-placement requirements for the project. Since the pavement slabs are comparatively small, the plant capacity generally will not be influenced by any requirements for maintaining the concrete in a plastic condition during placement. The main considerations will be the required placing schedule to meet the completion date for the construction or, when slip-form pavers are used, the required amount of concrete to maintain a uniform forward movement of the paver of not less than 2.5 fpm. However, the placement rate specified for pavements constructed during hot weather should also be considered in determining plant capacity requirements.

5-3. Concrete mixers. Mixers having a capacity of at least 5 cubic yards of mixed concrete are required for airfield paving projects, but smaller mixers may be permitted for small road projects and other small miscellaneous construction.

5-4. Approval of mixers. Before truck mixers or stationary mixers are approved for use, careful consideration will be given to the proposed plant and facilities for storage and handling of materials, and for batching, mixing, transporting, and handling of concrete at the job site to assure that adequate control of the concrete can be exercised. When truck mixers are used with a long haul between the batching plant and the project, adequate control of the concrete may be difficult due to variations in slump and air content caused by differences in mixing time. In such cases, it will be necessary to require that mixing be done after the mixer trucks arrive on the job. Truck mixers will be equipped with accurate revolution counters.

5-5. Transporting ready-mix concrete. Central-mixed concrete may be transported in a truck agitator, in a truck mixer operating at agitating speed, or in approved nonagitating equipment. Nonagitating equipment will have smooth, watertight, metal bodies equipped with gates to permit control of the discharge of the concrete; covers will be provided for protecting concrete in transit, as required. Concrete transported in nonagitating equipment will be discharged into the pavement forms within 45 minutes after the introduction of the mixing water to the cement and aggregates at the mixer. The major problem in

using ready-mixed concrete in pavement construction is to avoid segregation of the granular materials in discharging and transferring the concrete from the transporting unit to the final position in the form or on the subgrade in front of the slip-form paver. The use of ready-mixed concrete will require the use of suitable transfer and spreading equipment capable of depositing and distributing the concrete in an unsegregated condition in the final position in the forms. When low slump mixed concrete is transported, trucks equipped with vibrators are often required to discharge the concrete and should be required unless it is satisfactorily demonstrated that the concrete can be discharged without delay.